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What is claimed is:

1. A method for detecting an object in an area, comprising:

a) capturing a reference image of a patterned background having both light areas and dark areas;

b) calculating a value γ_{ref} representing the difference between the expected value of the brightness levels corresponding to the light areas in the reference image and the expected value of the brightness levels of the dark areas in the reference image;

c) capturing a live image;

d) calculating a value representing the difference between the expected value for the brightness levels in the live image corresponding to the light area of the reference image and the expected value for the brightness levels in the live image corresponding to the dark areas in the reference image; and

e) indicating an object has been detected when the value calculated in d) is less than a threshold T, where $0 < T < \gamma_{ref}$.

2. A method according to Claim 1, wherein the patterned background contains an approximately equal amount of light areas and dark areas.

3. A method according to Claim 1, wherein the size of the captured images are no bigger than the approximate size of the smallest object for which detection is desired.

4. A method according to Claim 1, wherein T is equal to about $\gamma_{ref}/2$.

5. A method according to Claim 1, wherein steps c), d), and e) are each performed two or more times for each time steps a) and b) are performed.

6. A method for detecting an object in an area, comprising:

a) capturing reference images for each of a plurality of area portions, the plurality of area portions covering the area, each portion having both light areas and dark areas;

b) for each reference image, calculating a value γ_{ref} representing the difference between the expected value of the brightness levels corresponding to the light areas in the reference image and the expected value of the brightness levels of the dark

areas in the reference image;

c) for each reference images, capturing a corresponding live image from the same area portion from which the reference image was captured;

d) for each pair of reference images and corresponding live image, calculating a value representing the difference between the expected value for the brightness levels in the live image corresponding to the light areas of the reference image and the expected value for the brightness levels in the live image corresponding to the dark areas in the reference image; and

e) indicating an object has been detected when the value calculated in d) for any pair of images is less than a threshold T, where $0 < T < \gamma_{ref}$.

7. A method according to Claim 6, wherein each of the plurality of area portions contains approximately equal amounts of light areas and dark areas.

8. A method according to Claim 6, wherein the size of the area portions is no bigger than the approximate size of the smallest object for which detection is desired.

9. A method according to Claim 6, wherein T is equal to about $\gamma_{ref}/2$.

10. A method according to Claim 6, wherein steps c), d), and e) are each performed two or more times for each time steps a) and b) are performed.

11. A method according to Claim 6, wherein each of the plurality of area portions overlaps at least one other area portion.

12. A method according to Claim 6, wherein each of the plurality of area portions overlaps about one half of at least one other area portion.

13. A method according to Claim 6, wherein the area comprising the plurality of area portions surrounds a second area.

14. An object detection system, comprising:

a) an image capture device adapted to capture reference images of a patterned background having both light areas and dark areas, and further adapted to capture live images; and

b) an image analysis device adapted to calculate a value γ_{ref} representing the difference between the expected value of the brightness levels

corresponding to the light areas in a reference image and the expected value of the brightness levels of the dark areas in the reference image, further adapted to calculate a value D representing the difference between the expected value for the brightness levels in a live image corresponding to the light area of the reference image and the expected value for the brightness levels in the live image corresponding to the dark areas in the reference image, and further adapted to indicate an object has been detected when the value D is less than a threshold T, where $0 < T < \gamma_{ref}$.

15. An object detection system according to Claim 14, wherein T is equal to about $\gamma_{ref}/2$.